RBI~ Technical Services

Project Management Consultancy Services

Quality Control Report

For the

Work of: Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)

BBMP

#2243, 4th 'A' Cross, Hampinagar

Vijayanagar 2nd Stage, Bangalore-560104

Tel.: 080-23300857 Email: rbitc2@gmail.com

RBI - Technical Services

Reg. No. 290202107599 [MICRO/SERVICES]

Road - Building - Irrigation Material Testing Laboratory

NABL Accredited Laboratory as per ISO/IEC 17025-2005

Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

To,

Executive Engineer,
Byatarayanapura Division,
BBMP.

Sir,

Sub:-Submission of Quality Control Report, Regarding.

We are submitting here with the Quality Control Reports. The Quality and Quantities are certified for the work of **Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)**

Executed by the Agency, **Sri. G. N. Ramesh**

Yours sincerely

RBI TECHNICAL SERVICES Bangalore. Sign.....

P.MUNIKRISHANAPPA,
B.E, MIE, KES, MIRC, MIIBE
Proprietor
RBI TECHNICAL SERVICES

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd State, Bengaluru - 560 104. Tel. : 080 - 23300857
Cell : 9448352709 Email : rbitc2@gmail.com

Quality Control Report For

Coarse and Fine Aggregate, Cement, Solid cement concrete blocks, kerb stones.

RBI - Technical Services

Reg. No. 290202107599 [MICRO/SERVICES]

Road - Building - Irrigation Material Testing Laboratory

NABL Accredited Laboratory as per ISO/IEC 17025-2005

Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2018-19 **Date:09.01.2019**

TEST REPORT

Client Name & address* : Executive Engineer,
Byatarayanapura Division, BBMP.

Name of Work* : Improvements roads in sahakaranagara G Block and Surroundings in ward no 07.

Name of the test : Sieve Analysis

Method of test : IS : 2386 Part 1 -1963 RA-2011

Type of Aggregate : Fine Aggregates (Sand)

Date of Testing : 08.01.2019

RBI-TECHNICAL SERVICES Quality Certified Bangalore

Total Wt. of Aggregates taken in gms= 500

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits as per IS 383-1970 (RA-2011) For Zone-II
10	0	0	0	100	100
4.75	25.5	5.10	5.10	94.9	90-100
2.36	56.9	11.38	16.48	83.5	75-100
1.18	125.5	25.10	41.58	58.4	55-90
0.6	84.5	16.90	58.48	41.5	35-59
0.3	103.2	20.64	79.12	20.9	8-30
0.15	88.5	17.70	96.82	3.2	0-20

* Information is furnished by the Customer/Representative

Note:

1. The report shall not be reproduced, except in full, without the written approval of the laboratory.
2. The results indicated above are based on the tests carried out on the samples received in the laboratory.
3. Any Query regarding the report must be reported within 15 days from the date of testing.

RBI -Technical Services
(CONSULTANT)
for RBI-TECHNICAL SERVICES
Proprietor

Assistant Engineer
AE(Tech)

Assistant Executive Engineer
Assistant Executive Engineer,
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd State, Bengaluru - 560 104. Tel. : 080 - 23300857
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Reg. No. 290202107599 [MICRO/SERVICES]

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Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2018-19

Date:10.01.2019

TEST REPORT

Client Name & address* : Executive Engineer,
Byatarayanapura Division, BBMP.

Name of Work* : Improvements roads in sahakaranagara G Block and Surroundings in ward no 07.

Name of the test : Sieve Analysis

Method of test : IS : 2386 Part 1 -1963 RA-2011

Type of Aggregate : Coarse Aggregates (20mm down size)

Date of Testing : 09.01.2019

Quality Certified

Total Wt. of Aggregates taken in gms= 10000

Is Sieve Size in mm	Weight Retained (gm)	Retained Weight in %	Cumulative Retained Weight in %	Cumulative Weight Passing in %	Spec.Limits as per IS 383-1970 (RA-2011)
40	0	0	0	100	100
20	495	4.95	4.95	95.05	95-100
10	5885	58.85	63.80	36.20	25-55
4.75	3450	34.50	98.30	1.70	0-10

* Information is furnished by the Customer/Representative

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RBI -Technical Services
(CONSULTANT)
For RBI-TECHNICAL SERVICES
Proprietor

Assistant Engineer

Assistant Executive Engineer
Assistant Executive Engineer
Kodigehalli Sub Division.
Yelahanka Zone, B.B.M.P.,
Bangalore.

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd State, Bengaluru - 560 104. Tel. : 080 - 23300857
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Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2018-19

Date:12.01.2019

TEST REPORT

Client Name & address* : Executive Engineer,
Byatarayanapura Division, BBMP.

Name of Work* : Improvements roads in sahakaranagara G Block and Surroundings in ward no 07.

Method of test : IS-4031 (Part -5), (Part - 4), (Part - 6) 1988 (RA-2009)

Type of Sample : Cement, OPC 43 grade

Date of Testing : 09.01.2019 to 12.01.2019

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PHYSICAL PROPERTIES

Sl.No	Name of the test	Test Results	Requirements as per IS: 8112-1989
1	Consistancy	30.50%	Not Mentioned
2	Initial Setting Time	120 minutes	Not Less than 30 Minutes
3	Final Setting Time	390 minutes	Not More than 600 Minutes
4	Compressive Strength		
	3 Days (72 hrs)	25.50 Mpa	Shall not be less than 23.0 Mpa

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RBI -Technical Services
(CONSULTANT)

Assistant Engineer

For RBI-TECHNICAL SERVICES

Proprietor

Assistant Executive Engineer

Assistant Executive Engineer,
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd State, Bengaluru - 560 104. Tel. : 080 - 23300857

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ISO 9001 - 2015 Certified

Report No:RBITS/MT/BBMP/2018-19 Date:12.01.2019

TEST REPORT

***Client Name & Address:** Executive Engineer,
Byatarayanapura Division, BBMP.

***Name ofWork:** Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)

Source of Sample: Samples supplied by the Customer

Date of Testing 11.01.2019

Sample Type & Size: Solid Cement concrete blocks of size (400*200*150)mm

Reference to BIS codes: IS : 2185 (Part 1) : 2005(RA 2010) Concrete Masonry Specification Part 1:Hollow and Solid Concrete Blocks (Dimensions -Annex-B, Clause 9.2 and 10 , Block density Annex -C Clause 9.3 and10, Compressive strength Annex -D Clause 9.4 and 10, Water absorption Annex -E Clause 9.5 and 10)

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1.COMPRESSIVE STRENGTH:

Sample No.	Size of solid block			Area	Failure Load	Compressive strength	Average
	Length	Breadth	Height				Compressive strength
	mm	mm	mm	(mm^2)	(KN)	N/mm2	(N/mm2)
1	400.0	150.0	200.0	60000	295.5	4.9	5.0
2	400.0	150.0	200.0	60000	289.6	4.8	
3	400.0	150.0	200.0	60000	295.5	4.9	
4	400.0	150.0	200.0	60000	300	5.0	
5	400.3	150.0	200.0	60045	301.2	5.0	
6	400.1	150.0	200.0	60015	305.2	5.1	
7	400.0	150.0	200.0	60000	304.7	5.1	
8	400.0	150.0	200.0	60000	315.2	5.3	

Remarks:-

The results pertain to the samples received and tested.

Any correction in the report will make this report invalid

This report without prior written approval should not be reproduced or published in full or part.

Samples will be disposed after 15 days from the date of issue of test certificate

End of the report

for RBI-TECHNICAL SERVICES

Proprietor

Assistant Professor
Kodigehalli Research Centre
Yelahanka Zone
Bangalore.

RBI - Technical Services

Reg. No. 290202107599 [MICRO/SERVICES]

Road - Building - Irrigation Material Testing Laboratory

NABL Accredited Laboratory as per ISO/IEC 17025-2005

Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Report No:RBITS/MT/BBMP/2018-19 Date:12.01.2019

TEST REPORT

***Client Name & Address:** Executive Engineer,
Byatarayanapura Division, BBMP.

***Name ofWork:** Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)

Source of Sample: Samples supplied by the Customer

Date of Testing 11.01.2019

Sample Type & Size: Solid Cement concrete blocks of size (400*200*200)mm

Reference to BIS codes: IS : 2185 (Part 1) : 2005(RA 2010) Concrete Masonry Specification Part 1:Hollow and Solid Concrete Blocks (Dimensions -Annex-B, Clause 9.2 and 10, Block density Annex -C Clause 9.3 and10, Compressive strength Annex -D Clause 9.4 and 10, Water absorption Annex -E Clause 9.5 and 10)

RBI-TECHNICAL SERVICES Quality Certified Bangalore

1.COMPRESSIVE STRENGTH:

Sample No.	Size of solid block			Area	Failure Load	Compressive strength	Average
	Length	Breadth	Height				Compressive strength
	mm	mm	mm	(mm^2)	(KN)	N/mm2	(N/mm2)
1	400.0	200.0	200.0	80000	352.2	4.4	4.1
2	400.0	200.0	200.0	80000	345.2	4.3	
3	400.0	200.0	200.0	80000	326.2	4.1	
4	400.0	200.0	200.0	80000	330.2	4.1	
5	400.3	200.0	200.0	80060	315.5	3.9	
6	400.1	200.0	200.0	80020	314.8	3.9	
7	400.0	200.0	200.0	80000	326.5	4.1	
8	400.0	200.0	200.0	80000	330.2	4.1	

Remarks:-

The results pertain to the samples received and tested.

Any correction in the report will make this report invalid

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Samples will be disposed after 15 days from the date of issue of test certificate

End of the report

of RBI-TECHNICAL SERVICES
Proprietor

Asstt. E.E (Retd)

Assistant Executive Engineer,
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

RBI - Technical Services

Reg. No. 290202107599 [MICRO/SERVICES]

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Job No:RBITS/MT/BBMP-BD/2018-19

Date: 12.01.2019

CC KERB STONE (CORE) TEST REPORT

Name of Client : **Executive Engineer,**
Byatarayanapura Division, BBMP.

Name of work : Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)

No.of Sample Tested : 03

Date of Testing : 11.01.2019

Techinical Reference : IS:516-1959 (Reaffirmed 2008), SP-24:1983.

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Sl. No.	Dia of Core D (mm)	Height of Core H (mm)	Core Wt (Kg)	Density of Core (kg / m^3)	H / D	Correction factor (Based on H/D)	Failure Load (kN)	Core Strength (N/mm^2)	Correction Factor for the Dia. (Strength of the Core x 1.08)	Corrected Cylinder Compressive Strength (N/mm^2)	Equivalent Cube Compressive Strength (N/mm^2)
1	75.00	105.00	0.810	1746.16	1.40	0.960	59.00	13.35	14.42	13.85	17.31
2	75.00	110.00	0.825	1697.65	1.47	0.960	60.00	13.58	14.67	14.08	17.60
3	75.00	105.00	0.836	1802.21	1.40	0.960	62.00	14.03	15.16	14.55	18.19

Note:

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RBI -Technical Services (CONSULTANT)

Assistant Engineer

Assistant Executive Engineer

Assistant Executive Engineer
Kodigehalli Sub Division
Yelahanka Zone, B.B.M.P.,
Bangalore.

For RBI-TECHNICAL SERVICES

Proprietor

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd State, Bengaluru - 560 104. Tel. : 080 - 23300857
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Quality Control Report For

Close Graded Granular Sub Base

RBI - Technical Services

Reg. No. 290202107599 [MICRO/SERVICES]

Road - Building - Irrigation Material Testing Laboratory

NABL Accredited Laboratory as per ISO/IEC 17025-2005

Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2018-19 **Date:23.01.2019**

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ATTERBERG LIMITS TEST FOR GSB
MORTH TABLE-400-13

Client	:	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of Work	:	Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)
Source of Sample	:	Hot Mix Plant
Date of Sample Testing	:	**22.01.2019 to 23.01.2019**
Material	:	**Close - Graded Granular Sub-Base, Grading II**

Sl. No.	Name of Test	Test Method	Test Results
1	Liquid Limit	IS : 2720-1985 Part 5 RA : 2010	20.00%
3	Plasticity index	IS : 2720-1985 Part 5 RA : 2010	NP

Remarks:

1 Results relate only to the sample (s) under test in as received condition and applicable parameter (s).

2 The sample will be stored upto one month from the date of issue of test report unless otherwise specified.

RBI -Technical Services
(CONSULTANT)

Assistant Engineer

Assistant Executive Engineer

Assistant Executive Engineer
Kodigehalli Sub Division
Yelahanka Zone, B.B.M.P.
Bangalore.

for RBI-TECHNICAL SERVICES

Proprietor

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ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2018-19 Date:23.01.2019

RBI- Technical Services

GRADATION FOR GSB
MORTH TABLE-400-11

Name of the Work: Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)

Client: Executive Engineer, Byatarayanapura Division, BBMP.

Source of Sample: On site

Date of Testing: 22.01.2019

Material: Close - Graded Granular Sub-Base, Grading II

RBI-TECHNICAL SERVICES Quality Certified Bangalore

Oven dry Wt.(gms) **10000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	MORTH Specifications Table 400-1.
53	0	0	0	100	100
26.5	495	4.95	4.95	95.05	70-100
9.5	3250	3254.95	32.5	67.5	50-80
4.75	2155	5409.95	54.1	45.9	40-65
2.36	1275	6684.95	66.8	33.2	30-50
0.425	1285	7969.95	79.7	20.3	15-25
0.075	1550	9519.95	95.2	4.8	3-10

Note: 1) The results indicated above are based on the tests carried out on the samples received in the laboratory.

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RBI -Technical Services
(CONSULTANT)

Asstt. N.D
Assistant Engineer

Assistant Executive Engineer

Assistant Executive Engineer,
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

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Proprietor

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ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2018-19 **Date:29.01.2019**

Quality Certified

RBI- Technical Services

ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE-400-13

Client	:	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of Work	:	Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)
Source of Sample	:	Hot Mix Plant
Date of Sample Testing	:	**28.01.2019 to 29.01.2019**
Material	:	**WMM**

Sl. No.	Name of Test	Test Method	Test Results
1	Liquid Limit	IS : 2720-1985 Part 5 RA : 2010	20.00%
3	Plasticity index	IS : 2720-1985 Part 5 RA : 2010	NP

Remarks:

1 Results relate only to the sample (s) under test in as received condition and applicable parameter (s).

2 The sample will be stored upto one month from the date of issue of test report unless otherwise specified.

RBI -Technical Services
(CONSULTANT)
For RBI-TECHNICAL SERVICES
Proprietor

Assistant Engineer

Assistant Executive Engineer
Assistant Executive Engineer
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

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Cell : 9448352709 Email : rbitc2@gmail.com

Job No:RBITS/MT/BBMP-BD/2018-19

Date:29.01.2019

Aggregate Shape Test
IS: 2386 Part I

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)
Type of Mix	**WMM**
Source of Sample	Hot Mix Plant
Date of Testing	**28.01.2019**

Size of Aggregates		Weight of Fraction consisting of atleast 200 pieces, g		Thickness guage size, mm	Weight of aggregate in each fraction passing thickness guage, g		Length guage size, mm	Weight of aggregate in each fraction retained on length guage, g	
Passing through IS sieve, mm	Retained on IS sieve, mm								
63	50	W_1	0	23.9	w_1	0	--	x_1	0
50	40	W_2	0	27	w_2	0	81	x_2	0
40	25	W_3	0	19.5	w_3	0	58	x_3	0
31.5	25	W_4	0	16.95	w_4	0	--	x_4	0
25	20	W_5	2350	13.5	w_5	155	40.5	x_5	155
20	16	W_6	1950	10.8	w_6	140	32.4	x_6	125
16	12.5	W_7	1150	8.55	w_7	120	25.5	x_7	115
12.5	10	W_8	795	6.75	w_8	105	20.2	x_8	90
10	6.3	W_9	105	4.89	w_9	5	14.7	x_9	15

Flakiness Index 8.27%

Elongation Index 7.87%

Combined Flakiness & Elongation Index 16.14%

Comments:

→ Maximum allowable Combined Flakiness and Elongation Index for Bituminous Concrete is 30%

RBI -Technical Services
(CONSULTANT)

RBI-TECHNICAL SERVICES
Proprietor

Assistant Engineer

Assistant Executive Engineer

Assistant Executive Engineer,
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

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Job No:RBITS/MT/BBMP-BD/2018-19 **Date:29.01.2019**

RBI- Technical Services

GRADATION FOR WMM

MORTH TABLE-400-11

Name of the Work	**Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)**
Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Source of Sample	**Hot Mix Plant**
Date of Testing	**28.01.2019**
Material	**Wet Mix Macadam**

Oven dry Wt.(gms) **10000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	445	4.45	4.45	95.55	95-100
22.4	3250	32.5	37.0	63.1	60-80
11.2	1874	18.74	55.7	44.3	40-60
4.75	1525	15.25	70.9	29.1	25-40
2.36	1260	12.6	83.5	16.5	15-30
0.600	705	7.1	90.6	9.4	8-22
0.075	695	7.0	97.5	2.5	0-8

Note: 1) The results indicated above are based on the tests carried out on the samples received in the laboratory.

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RBI -Technical Services
(CONSULTANT)

for RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

Assistant Executive Engineer

Assistant Executive Engineer,
Kodigehalli Sub Division
Yelahanka Zone, B.B.M.P.,
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RBI - Technical Services

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NABL Accredited Laboratory as per ISO/IEC 17025-2005

Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2018-19

Date:29.01.2019

RBI- Technical Services

AGGREGATE IMPACT VALUE

(IS : 2386 Part - 4)

Client	Executive Engineer, Byatarayanapura Division, BBMP.
Name of Work	Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)
Source of Sample	Hot Mix Plant
Date of Testing	28.01.2019
Material	Wet Mix Macadam

Quality Certified

Description		Trails		
		1	2	3
Wt.Of stone pieces(dry) passing IS Sieve 12.5mm but retained in IS Sieve 10mm(gm)	(Wa)	323.0	323.0	323.0
Wt.Of the fraction retained in IS Sieve 2.36mm after the impact test(gm)	(Wb)	263.6	264.0	263.5
Wt.Of the fraction Passed in IS Sieve 2.36mm after the impact test(gm)	(Wc)	58.50	58.60	58.80
Aggregate Impact value (%)	(Wc/Wa)100	18.1	18.1	18.2
Average Aggregate Impact value (%)		18.2		
Specified Aggregate Impact value (%)		30.0		

RBI -Technical Services (CONSULTANT)

for RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

Assistant Executive Engineer

Assistant Executive Engineer
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd State, Bengaluru - 560 104. Tel. : 080 - 23300857

Cell : 9448352709 Email : rbitc2@gmail.com

Quality Control Report For

Bituminous Macadam

RBI - Technical Services

Reg. No. 290202107599 [MICRO/SERVICES]

Road - Building - Irrigation Material Testing Laboratory

NABL Accredited Laboratory as per ISO/IEC 17025-2005

Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2018-19 **Date:13.02.2019**

TEST REPORT

Client	:	**Executive Engineer,** **Byatarayanapura Division, BBMP.**
Name of the work	:	Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)
Source of Sample	:	Hot Mix Plant
Date of Testing	:	12.02.2019

RBI TECHNICAL SERVICES Quality Certified Bangalore

The results of the tests conducted on the **Bitumen VG-30** sample using for Bituminous Macadam collected from the contractor's plant are as follows:

Sl.No	Description	Test Result	Requirement as per IS:73:2013 for Paving Bitumen
1	Penetration at 25^{0}c, 1/10 mm,100g.5s	57	Min, 45
2	Softening point, ^{0}c	52	Min. 47
3	Flash Point, ^{0}c	240	Min. 220
4	Ductility at 25^{0}c, cm Min	100	40

⇒ *The results indicated above are based on the tests carried out on the samples received in the laboratory.*

⇒ *Any Query regarding the report must be reported immediately.*

For RBI-TECHNICAL SERVICES

Proprietor

RBI -Technical Services

Assistant Engineer

Assistant Executive Engineer

Assistant Executive Engineer
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RBI - Technical Services

Reg. No. 290202107599 [MICRO/SERVICES]

Road - Building - Irrigation Material Testing Laboratory

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Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2018-19 Date:13.02.2019

RBI- Technical Services

Aggregate Impact Value

IS: 2386 Part IV

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)
Type of Mix	**Bituminous Macadam**
Source of Sample	Hot Mix Plant
Date of Testing	**12.02.2019**

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	384	383	
2	Weight of aggregate passing 2.36 mm sieve after the test = W_2 g	85.9	86	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	297.5	296.9	
4	Aggregate Impact value = percent fines 100* (W_2/W_1) percent	22.37	22.45	**22.41**

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Macadam is 30%

Note: 1) The results indicated above are based on the tests carried out on the samples received in the laboratory.

2)Any Query regarding the report must be reported immediately.

RBI -Technical Services
(CONSULTANT)
for RBI-TECHNICAL SERVICES
Proprietor

Assistant Engineer
AE(NH)

Assistant Executive Engineer
Assistant Executive Engineer
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Yelahanka Zone, B.B.M.P.
Bangalore.

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd State, Bengaluru - 560 104. Tel. : 080 - 23300857

Cell : 9448352709 Email : rbitc2@gmail.com

Job No:RBITS/MT/BBMP-BD/2018-19

Date:13.02.2019

Aggregate Shape Test

IS: 2386 Part I

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)
Type of Mix	**Bituminous Macadam**
Source of Sample	Hot Mix Plant
Date of Testing	**12.02.2019**

Size of Aggregates		Weight of Fraction consisting of atleast 200 pieces, g		Thickness guage size, mm	Weight of aggregate in each fraction passing thickness guage, g		Length guage size, mm	Weight of aggregate in each fraction retained on length guage, g	
Passing through IS sieve, mm	Retained on IS sieve, mm								
63	50	W_1	0	23.9	w_1	0	--	x_1	0
50	40	W_2	0	27	w_2	0	81	x_2	0
40	25	W_3	0	19.5	w_3	0	58	x_3	0
31.5	25	W_4	0	16.95	w_4	0	--	x_4	0
25	20	W_5	0	13.5	w_5	0	40.5	x_5	0
20	16	W_6	2505	10.8	w_6	165	32.4	x_6	165
16	12.5	W_7	1750	8.55	w_7	155	25.5	x_7	105
12.5	10	W_8	995	6.75	w_8	125	20.2	x_8	105
10	6.3	W_9	120	4.89	w_9	50	14.7	x_9	10

Flakiness Index 9.22%

Elongation Index 7.17%

Combined Flakiness & Elongation Index 16.39%

Comments:

→ Maximum allowable Combined Flakiness and Elongation Index for Bituminous Macadam is 30%

RBI -Technical Services
(CONSULTANT)
RBI-TECHNICAL SERVICES
Proprietor

Assistant Engineer
A.E(QA)

Assistant Executive Engineer
Assistant Executive Engineer,
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
Bangalore.

RBI - Technical Services

Reg. No. 290202107599 [MICRO/SERVICES]

Road - Building - Irrigation Material Testing Laboratory

NABL Accredited Laboratory as per ISO/IEC 17025-2005

Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2018-19 Date:13.02.2019

RBI- Technical Services

Aggregate Gradation Test

IS : 2386 Part I

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)
Type of Mix	**Bituminous Macadam**
Source of Sample	Hot Mix Plant
Date of Testing	**12.02.2019**

RBI-TECHNICAL SERVICES Quality Certified Bangalore

Total Weight of Sample: **5000**

SIEVE SIZE, mm	Weight Retained, gm	Cummulative Weight retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
26.5	0	0	0	100	100	Bituminous Macadam Grade-II specification as per MORTH
19	495	9.90	9.90	90.10	90 - 100	
13.2	1625	32.50	42.40	57.60	56 - 88	
4.75	1265	25.30	67.70	32.30	16 - 36	
2.36	755	15.10	82.80	17.20	4-19	
0.3	535	10.70	93.50	6.50	2-10	
0.075	200	4.00	97.50	2.50	0-8	

Note: 1) The results indicated above are based on the tests carried out on the samples received in the laboratory.
2)Any Query regarding the report must be reported immediately.

RBI -Technical Services
(CONSULTANT)

for RBI-TECHNICAL SERVICES

Prop.

Assistant Engineer

Assistant Executive Engineer
Assistant Executive Engineer
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RBI - Technical Services

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Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Quality Control Report For

Bituminous Concrete

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd State, Bengaluru - 560 104. Tel. : 080 - 23300857

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NABL Accredited Laboratory as per ISO/IEC 17025-2005

Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2018-19 **Date:19.02.2019**

RBI-TECHNICAL SERVICES Quality Certified Bangalore

TEST REPORT

Client	:	**Executive Engineer,** **Byatarayanapura Division, BBMP.**
Name of the work	:	Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)
Source of Sample	:	Hot Mix plant
Date of Testing	:	18.02.2019

The results of the tests conducted on the **CRMB 55** sample using for Bituminous Concrete collected from the contractor's plant are as follows:

Sl.No	Description	Test Result	Requirement as per IS:15462:2004 for CRMB 55
1	Penetration at 25^0c, 1/10 mm,100g.5s	55	< 60
2	Softening point, ^{0}c	58	Min. 55
3	Flash Point, ^{0}c	230	Min. 220

⇒ *The results indicated above are based on the tests carried out on the samples received in the laboratory.*

⇒ *Any Query regarding the report must be reported immediately.*

For RBI-TECHNICAL SERVICES

Proprietor

RBI -Technical Services

Assistant Engineer

Assistant Executive Engineer

Assistant Executive Engineer,
Kodigehalli Sub Division,
Yelahanka Zone, B.B.M.P.,
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RBI - Technical Services

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Road - Building - Irrigation Material Testing Laboratory

NABL Accredited Laboratory as per ISO/IEC 17025-2005

Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2018-19 Date:19.02.2019

RBI- Technical Services

Aggregate Impact Value

IS: 2386 Part IV

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)
Type of Mix	**Bituminous Concrete**
Source of Sample	Hot Mix Plant
Date of Testing	**18.02.2019**

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	381	380	
2	Weight of aggregate passing 2.36 mm sieve after the test = W_2 g	83.2	84.2	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	297.5	295.8	
4	Aggregate Impact value = percent fines			
	100* (W_2/W_1) percent	21.84	22.16	
				22.00

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

Note: 1) The results indicated above are based on the tests carried out on the samples received in the laboratory.

2)Any Query regarding the report must be reported immediately.

RBI -Technical Services
(CONSULTANT)

Assistant Engineer

Assistant Executive Engineer

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RBI - Technical Services

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Managing Director - P. Munikrishnappa, B.E., (Civil) M.I.E. K.E.S.

ISO 9001 - 2015 Certified

Job No:RBITS/MT/BBMP-BD/2018-19 **Date:19.02.2019**

RBI- Technical Services

Aggregate Gradation Test

IS : 2386 Part I

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)
Type of Mix	**Bituminous Concrete**
Source of Sample	Hot Mix Plant
Date of Testing	**18.02.2019**

Total Weight of Sample: **5000** gms

SIEVE SIZE, mm	Weight Retained, gm	Cummulative Weight retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grading-II specification as per MORTH
13.2	395	7.90	7.90	92.10	79 - 100	
9.5	585	11.70	19.60	80.40	70 - 88	
4.75	805	16.10	35.70	64.30	53 - 71	
2.36	595	11.90	47.60	52.40	42 - 58	
1.18	525	10.50	58.10	41.90	34 - 48	
0.600	335	6.70	64.80	35.20	26 - 38	
0.300	585	11.70	76.50	23.50	18 - 28	
0.150	475	9.50	86.00	14.00	12 - 20	
0.075	370	7.40	93.40	6.60	4 - 10	

Note: 1) The results indicated above are based on the tests carried out on the samples received in the laboratory.
2)Any Query regarding the report must be reported immediately.

RBI -Technical Services
(CONSULTANT)

for RBI-TECHNICAL SERVICES

Proprietor

Assistant Engineer

Assistant Executive Engineer
Assistant Executive Engineer
Kodigehalli Sub Division,
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Bangalore.

2243, 4th 'A' Cross, Hampinagar, Vijayanagar 2nd State, Bengaluru - 560 104. Tel. : 080 - 23300857
Cell : 9448352709 Email : rbitc2@gmail.com

Job No:RBITS/MT/BBMP-BD/2018-19 **Date:19.02.2019**

Aggregate Shape Test

IS: 2386 Part I

Client	**Executive Engineer, Byatarayanapura Division, BBMP.**
Name of the Work	Widening and formation of Footpath for NH-7 (Esteem mall point upto Kempapura Circle by acquiring the land of Embassy Builders and adjacent private property)
Type of Mix	**Bituminous Concrete**
Source of Sample	Hot Mix Plant
Date of Testing	**18.02.2019**

Size of Aggregates		Weight of Fraction consisting of atleast 200 pieces, g		Thickness guage size, mm	Weight of aggregate in each fraction passing thickness guage, g		Length guage size, mm	Weight of aggregate in each fraction retained on length guage, g	
Passing through IS sieve, mm	Retained on IS sieve, mm								
63	50	W_1	0	23.9	w_1	0	--	x_1	0
50	40	W_2	0	27	w_2	0	81	x_2	0
40	25	W_3	0	19.5	w_3	0	58	x_3	0
31.5	25	W_4	0	16.95	w_4	0	--	x_4	0
25	20	W_5	0	13.5	w_5	0	40.5	x_5	0
20	16	W_6	2505	10.8	w_6	197	32.4	x_6	187
16	12.5	W_7	1850	8.55	w_7	135	25.5	x_7	157
12.5	10	W_8	1250	6.75	w_8	184	20.2	x_8	100
10	6.3	W_9	200	4.89	w_9	18	14.7	x_9	27

Flakiness Index 9.20%

Elongation Index 8.11%

Combined Flakiness & Elongation Index 17.31%

Comments:

→ Maximum allowable Combined Flakiness and Elongation Index for Bituminous Concrete is 30%

RBI -Technical Services
(CONSULTANT)
RBI-TECHNICAL SERVICES
Proprietor

Assistant Engineer
AE(Civil)

Assistant Executive Engineer
Assistant Executive Engineer
Kodigehalli Sub Division,
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